# Abstract

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## incorporating fuzzy ahp in scor model for measuring supply chain operations performance: a case study of an egyptian natural bottled water company

purpose: this paper proposes a method which incorporates the fuzzy analytic hierarchy process approach (fuzzy ahp) the supply chain operations reference-model (scor) to evaluate improve the performance of supply chain operations. research approach: the performance of supply chain operations was measured using a performance measurement tool that combines scor model the fuzzy ahp technique. to demonstrate the applicability of the proposed approach, a case study of an egyptian natural bottled water company was conducted. findingsiginality: this paper developed a method to quantify the sc performance through quantifying: sc measurement criteria, environmental uncertainty, subjective judgments of sc performance evaluators. applying this method can be an objective tool to evaluate improve the performance of sc operations. research impact: the proposed method is based on quantifying the sc performance through: (i) describing the characteristics the structure of the supply chain (ii) identifying the main processes sub processes in the supply chain mapping these processes to scor model process ids, (iii) identifying the corresponding performance measurement attributes for the previous mapped processes based on the scor model standard performance metrics, (iv) determining the relative importance weight of each attribute using fuzzy pair-wise comparison, (v) assigning a performance rate for each attribute using performance rating scale. (vi) consequently, calculating the weighted rate for each attribute by multiplying the importance weight of each attribute by its performance rate. (vii) finally, aggregating the weighted rate for each attribute across all sc performance measurement attributes using the weighted averaging aggregation method to determine the performance index of the company's supply chain. since each sc performance measurement attribute has weighted rate corresponds to certain processes in the sc, sc processes that need improvement can be identified the overall sc performance, in terms of sc index, can be evaluated. practical impact: this method allowsganizations to assess improve the effectiveness efficiency of supply chain operations in meeting supply chain goals to contribute to overall improvement in the company's performance through identifying sc processes that are working well areas where the supply chain might need improvement. keywords: supply chain performance, scor model, fuzzy ahp